

**Experimental Experience with Flexible Structures**

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**Abstract**

This paper will focus on a flexible structure experiment developed at the California Institute of Technology. The main thrust of the experiment is to address the identification and robust control issues associated with large space structures by capturing their characteristics in the laboratory. The design, modeling, identification and control objectives will be discussed within this paper. Also, the subject of uncertainty in structural plant models and the frequency shaping of performance objectives will be expounded upon. Theoretical and experimental results of control laws designed using the identified model and uncertainty descriptions will be presented.